DOCUMENT RESUME

ED 127 882 HE 008 195

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TITLE The Job Market Vs. Collegiate Curricula: A Potential Conflicting Pressure.
PUB DATE May 76
NOTE 27p.; Paper presented at the Association for Institutional Research Forum (Los Angeles, California, May 1976)
AVAILABLE FROM University Bureau of Institutional Research, University of Illinois, 252 . lini Tower, Champaign, Illinois 61820

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS *Career Choice; *College Majors; Educational Planning; *Employment Patterns; *Higher Education; Job Market; *Job Placement; *Success Factors; Surveys; Unemployment

ABSTRACT

Results of Surveys of graduates (based on the 1972 and 1973 classes) soon after receipt of a degree are used to document the existence of dramatic differences in level of vocational success achieved by the graduates of various curricular areas. Measures of vocational success discussed include unemployment rate, underemployment rate, incidence of employment in jobs related to the college curriculum, and annual salary. The persistence of these patterns over time is examined using results from a 1975 survey of 1970 graduates. The extent to which graduates seemingly are concerned about the existing curriculum-job market relationships also is discussed along with the implications that the apparent conflicting pressure has for institutional and student planning. (Author)

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THE JOB MARKET VS. COLLEGIATE CURRICULA:

A POTENTIAL CONFLICTING PRESSURE

A Paper Presented at
The Association for Institutional Research Forum
May 3-6, 1976

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HE008195

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INTRODUCTION AND BACKGROUND

The range of instructional program offerings at most institutions of higher education has continuously expanded over the years. The typical pattern has been to add new programs, but rarely have programs been discontinued, and then usually only under the most extreme circumstances. Within this framework, it is conceivable that an imbalance could develop between an institution's curricular programs and the needs of society as reflected by the jobs available to college graduates. Such a lack of congruence between the job market and curricular programs could be particularly critical during periods when the overall demand for college graduates is lower than the supply, as recently seems to have been the case, and employers thus can afford to consider only graduates of specific curricula.

Any substantial lack of agreement between an institution's curricular programs and the needs of the labor market would tend to bring about, or at least to accentuate, a basic competing pressure; that is, the pressure between (1) the institution's desire to continue to offer programs which, while somewhat lacking in their relevance to the present labor needs of society, nonetheless are deemed to have other values, and (2) the institution's obligation to provide its graduates with marketable skills. Institutions need to keep constantly abreast of the extent to which this competing pressure is operating. They therefore have to know, for a given point in time, what relationships exist between traditional college programs and the job market for graduates.

Studies carried out over the past several years at the University of Illinois provide considerable insight into current relationships between college programs and the world of work. These studies have concerned the employment situation for graduates approximately one year after receipt of their degrees as well as after a five year period.

During 1973 that institution surveyed its class of 1972 by sending mail questionnaires to over 9,000 graduates of its three campuses. Graduates at all degree levels (bachelor's, master's, doctor's and professional) were included.[1] The graduates surveyed were asked a number of questions

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[1] The June bachelor's degree graduates of the Urbana-Champaign campus (the largest of the three campuses) were omitted from the survey of 1972 graduates. Those degree recipients had already been surveyed by the campus, and it was decided not to survey the same group a second time.

dealing with their post-graduation vocational experiences and their perception of the institution and its programs. The following year, 1974, the more than 12,000 degree recipients of calendar 1973 were mailed an expanded, although basically comparable, questionnaire. Both years the response rate exceeded 50 percent (61.6 percent in 1973 and 52.5 percent in 1974). Every curriculum offered at the institution was included in each of the surveys.

The results of the earlier two surveys were augmented during 1975 by a survey study of the 1970 class. That study, designed to provide data concerning the more long-term (five years after receipt of a degree) employment success of graduates of the institution, involved over 10,000 graduates.

CURRICULAR DIFFERENCES IN VOCATIONAL SUCCESS OF COLLEGE GRADUATES

Do recent college graduates of various majors experience differing levels of vocational success? If so, to what extent do the differences persist over time? These questions were addressed in terms of four indicators or measures of vocational success. The first indicator is the rate of involuntary unemployment. The other three measures concern the situation for employed graduates. They include the extent of underemployment, the rate of employment in jobs unrelated to the college major, and gross annual salary.

For the current analysis, specific majors represented among the graduates surveyed were grouped into 18 broad curricular areas.[2] This aggregation of the data reduced the number of "curricula" to be analyzed and, at the same time, resulted in larger samples for the curricular groupings analyzed.

The Situation Soon After Graduation

The surveys of 1972 and 1973 graduates were the primary sources of information concerning curricular differences in employment success soon after receipt of the degree. Results from the 1975 survey of 1970 graduates were also used for this analysis.

Unemployment Rate. The unemployment rate for all bachelor's level graduates was 4.9 percent for each of the 1972 and 1973 graduating classes (See Tables 1 and 2 in APPENDIX B). Those receiving degrees in the various curricular areas varied rather considerably around these overall figures.

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[2] The curricular areas used are based on the taxonomy of instructional programs developed by NCHEMS at WICHE. The specific majors included in each curricular area are listed in APPENDIX A.

For the 1972 class, the unemployment rate for individual curricular areas ranged from 0.0 percent to 9.0 percent. The variation within the 1973 graduating group was from a low of 0.0 percent to a high of 10.1 percent. The curricular areas showing the highest and lowest rates of unemployment at the bachelor's level for the two years are shown below.

Highest Unemployment

1972		1973	
Physical Sciences	9.0%	Psychology	10.1%
Mathematics	8.7%	Social Sciences	7.7%
Foreign Languages	7.8%	Letters	6.8%
Social Sciences	7.6%	Foreign Languages	6.5%
Letters	7.3%	Communications	5.6%
Communications	6.7%	Fine & Applied Arts	5.4%
Psychology	6.6%	Public Affairs & Services	5.4%

Lowest Unemployment

1972		1973	
Public Affairs & Services	0.0%	Computer Science	0.0%
Home Economics	0.0%	Home Economics	1.1%
Health Professions	1.1%	Physical Sciences	1.9%
Architecture & Environmental Design	2.0%	Engineering	2.9%
Engineering	2.1%	Business & Management	3.1%
Education	2.2%	Education	3.6%
Agriculture & Natural Resources	3.1%	Health Professions	3.8%

A fairly substantial degree of agreement was shown between these bachelor's level rates for the two years, several curricular areas exhibiting either relatively high or low unemployment each year. The areas producing high rates of unemployment both years were Foreign Languages, Social Sciences, Letters, Communications and Psychology. Both graduating classes exhibited a low incidence of involuntary unemployment for those who had majored in Home Economics, Health Professions, Engineering and Education.

The results on unemployment for the graduate level degree recipients did not agree very closely with those at the bachelor's level (see Tables 1 and 2). In 1972, of the seven curricular areas producing high levels of unemployment among bachelor's graduates, only two--Foreign Languages and Letters--also exhibited relatively high rates of unemployment for both master's and doctor's degree graduates. The 1972 graduates in only three curricular areas--Agriculture & Natural Resources, Engineering and Health Professions--repeated relatively low rates of unemployment for both master's and doctor's degree graduates. The results from the survey of the 1973

class found just one of the seven curricular areas producing high unemployment for bachelor's graduates--Social Sciences--with a relatively high incidence of unemployment among those who had received master's and doctor's degrees. At the other end of the distribution, Health Professions and Computer Science were the sole curricular areas also exhibiting low rates of unemployment for the 1973 master's and doctor's degree graduates.

Underemployment Rate. Underemployment rate was the second indicator of vocational success considered. An employed graduate was judged to be underemployed if he/she was employed in a clerical, skilled, semi-skilled, laboring, service or routine sales job.

The underemployment rates for all bachelor's degree graduates were 22.0 percent for the 1972 class and 19.4 percent for those who graduated in 1973 (See Tables 3 and 4). The inter-curricular variation in underemployment was very great both years, the differences being considerably more pronounced than those for underemployment. The curricular areas whose bachelor's graduates were most often and least often underemployed are listed below.

Highest Underemployment

1972		1973	
Social Sciences	49.8%	Psychology	47.2%
Psychology	47.7%	Social Sciences	43.8%
Foreign Languages	38.8%	Letters	34.7%
Public Affairs & Services	37.5%	Foreign Languages	34.5%
Letters	34.6%	Home Economics	29.3%
Home Economics	26.1%	Fine & Applied Arts	26.1%
Agriculture & Natural Resources	25.5%	Public Affairs & Services	24.1%

Lowest Underemployment

1972		1973	
Health Professions	0.0%	Health Professions	1.6%
Architecture & Environmental Design	4.3%	Engineering	3.0%
Computer Science	5.9%	Computer Science	5.0%
Communications	6.4%	Architecture & Environmental Design	7.1%
Physical Sciences	7.1%	Agriculture & Natural Resources	10.5%
Engineering	7.5%	Business & Management	11.5%
Education	13.9%	Education	14.2%

The consistency between the two graduating groups was considerable. Six of the seven curricular areas showing the highest rates of underemployment rate for the 1972 class bachelor's graduates repeated the following year. These six areas included Social Sciences, Psychology, Foreign Languages, Public Affairs & Services, Letters and Home Economics. Five of seven curricular areas produced the lowest incidences of underemployment each year, including Health Professions, Architecture & Environmental Design, Computer Science, Engineering and Education.

Each year the incidence of underemployment among master's and doctor's degree recipients was dramatically lower than the rates for bachelor's graduates. These low rates very possibly were artifacts of the criterion of underemployment used. The uniformly low rates of underemployment for the doctoral graduates--essentially all of the curricular areas both years showed no underemployment--in fact precluded any comparison of those results with the rates for the bachelor's level.

The underemployment rates at the master's level were quite similar to those found for the bachelor's graduates. For the 1972 class, all but two of the seven curricular areas providing the highest rates at the bachelor's level were also among the highest curricular areas for master's graduates, the two exceptions being Public Affairs & Services and Agriculture & Natural Resources. A similar situation occurred for the opposite end of the distribution for that year, with only three curricular areas--Education, Physical Sciences and Communications--failing to show a relatively low rate of underemployment also at the master's level. The pattern for the 1973 class was virtually identical. Of the seven curricular areas exhibiting the highest incidences of underemployment among bachelor's graduates, only two--Home Economics and Public Affairs & Services--were not among the highest rate curricular areas for master's graduates. Likewise, only Education and Business & Management, of the seven lowest underemployment curricular areas for 1973 bachelor's graduates, failed to reflect the same relatively low rate of underemployment at the master's level.

Employment in Jobs Unrelated to Major. The third measure of occupational success considered in the analysis was the rate of employment in jobs judged by the graduates to be unrelated to the majors of their degree. This variable was not included in the survey of 1972 graduates.

One-fourth of the 1973 bachelor's degree graduates who were employed felt that they were working in jobs unrelated to the majors of their 1973 degrees (see Table 5). As was true for underemployment, the amount of variation among the different curricular areas was extremely great. The curricular areas exhibiting the highest and lowest rates of employment in jobs unrelated to the major were as follows:

Highest Rates of Unrelated Employment

Social Sciences	63.3%
Psychology	62.9%
Foreign Languages	50.6%
Letters	46.7%
Physical Sciences	32.7%
Biological Sciences	31.2%
Fine & Applied Arts	28.4%

Lowest Rates of Unrelated Employment

Health Professions	2.1%
Computer Science	5.0%
Engineering	5.8%
Architecture & Environmental Design	7.9%
Business & Management	11.1%
Education	14.2%
Agriculture & Natural Resources	15.3%

For each of the seven highest rate curricular areas, in excess of 25 percent of the bachelor's graduates were in jobs unrelated to their majors. Several of the rates, in fact, were above 50 percent. In contrast, none of the seven areas with the lowest rates found as many as 16 percent of the graduates in work unrelated to the major.

A fair degree of consistency was found between the curricular results for the bachelor's graduates and those at the master's and doctor's degree levels. Of the seven curricular areas showing the highest rates of unrelated employment at the bachelor's level, three--Social Sciences, Psychology and Foreign Languages--also were among the highest rate curricular areas at both the master's and doctor's levels. Similarly, three of seven curricular areas with the lowest rates for bachelor's graduates produced correspondingly low rates at each of the two graduate degree levels. Those three were Education, Computer Science and Health Professions.

As might have been expected, the master's and doctor's graduates had been considerably more successful than the bachelor's graduates in obtaining jobs related to their majors.

Annual Salary. Gross annual salary was the final indicator of vocational success analyzed. This variable was obtained only for the 1973 class.

The median annual salary for bachelor's degree graduates was $9,600 (see Table 6). As was true for the other variables, the variance among the curricular areas was considerable, the lowest median salary being only $7,100 and the highest median salary $12,100, a $5,000 difference.

The curricular areas with the lowest and the highest median annual salaries at the bachelor's level are listed below:

Lowest Annual Salary		Highest Annual Salary	
Home Economics	$7,100	Engineering	$12,100
Letters	8,000	Computer Science	11,500
Foreign Languages	8,000	Health Professions	11,000
Fine & Applied Arts	8,100	Business & Management	10,900
Psychology	8,200	Physical Sciences	10,000
Communications	8,200	Agriculture & Natural Resources	9,700
		Architecture & Environmental Design	9,500

Comparison of Results for the Four Indicators. Each of the four indicators of vocational success produced great variation across the 18 curricular areas. On each indicator, the bachelor's graduates of some curricular areas experienced considerably more success than others. To what extent, however, was there similarity among the four indicators of vocational success in terms of which curricular areas were at either the "most successful" or "least successful" end of the distribution? Examination of the results indicates that there was, in fact, a considerable degree of consistency in this respect.

Seven curricular areas were among the most successful areas on at least three of the four indicators. (The results from the survey of 1973 graduates were used for unemployment and underemployment.) These most successful curricular areas were as follows:

Most Successful Curricular Areas

	Unemployment	Underemployment	Relation Between Job & Major	Salary
Engineering	X	X	X	X
Computer Science	X	X	X	X
Health Professions	X	X	X	X
Business & Management	X	X	X	X
Agriculture & Natural Resources		X	X	X
Education	X	X	X	
Architecture & Environmental Design		X	X	X

Bachelor's degree graduates in Agriculture & Natural Resources and Architecture & Environmental Design were most successful vocationally on every indicator except unemployment rate. Graduates in Education failed to be among the

most successful only on salary. The other four curricular areas--Engineering, Computer Science, Health Professions and Business & Management--placed among the most successful areas on all four indicators.

Five other curricular areas found their bachelor's graduates generally among the least successful. They are listed below.

Least Successful Curricular Areas

	Unemployment	Underemployment	Relation Between Job & Major	Salary
Psychology	X	X	X	X
Social Sciences	X	X	X	
Letters	X	X	X	X
Foreign Languages	X	X	X	X
Fine & Applied Arts	X	X	X	X

Bachelor's level graduates in Psychology, Letters, Foreign Languages and Fine & Applied Arts were among the least successful on all four indicators of vocational success. Persons with degrees in Social Sciences had been relatively non-successful in every respect except salary.

The Survey of 1970 Graduates. Certain results from the 1975 survey of the 1970 class offer an interesting comparison with the previously discussed survey data.

The 1970 graduates were asked to provide information about their first post-graduation job (if other than the job held at the time of the survey). Two of the four indicators of vocational success analyzed for the 1973 class were included--relation between the job and the major and gross annual salary. Since employed persons who had not changed jobs since receipt of their degrees approximately five years earlier did not respond to these questions, the results strictly speaking are not exactly comparable to those for the 1973 class. The two sets of data, nonetheless, seem to be reasonably comparable, and the 1970 results for the two indicators of vocational success are given below.

Rate of Unrelated Employment (First Job)

Highest Rates		Lowest Rates	
Letters	59.1%	Health Professions	6.8%
Social Sciences	55.0%	Engineering	14.7%
Psychology	47.7%	Home Economics	16.0%
Foreign Languages	44.3%	Architecture & Environmental Design	16.1%
Fine & Applied Arts	35.6%	Computer Science	16.7%
Physical Sciences	32.6%	Education	18.0%
Biological Sciences	28.3%	Communications	18.5%

Annual Salary (First Job)

Lowest Salaries		Highest Salaries	
Fine & Applied Arts	$8,031	Computer Science	$14,650
Foreign Languages	8,128	Health Professions	13,235
Education	8,138	Engineering	12,422
Public Affairs & Services	8,197	Business & Management	11,979
Home Economics	8,229	Communications	11,172
Letters	8,389	Agriculture & Natural Resources	10,894
		Physical Sciences	10,576

These results on the two indicators for the entry job situation for 1970 bachelor's graduates bear a close degree of agreement with results found for the 1973 graduates. On the relation between the job and the major, the curricular areas exhibiting the highest rates of unrelated employment for the 1970 graduates included all the highest rate curricular areas for the 1973 class. Five of the seven lowest rate curricular areas on this indicator for the 1973 class (all except Business & Management and Agriculture & Natural Resources) were repeated for the 1970 graduates. A similar picture was presented for annual salary,[3] with four of the six curricular areas being common to the two graduating groups at the low salary end (the exceptions being Psychology and Communications) and six of seven repeating at the high end (the lone exception was Architecture & Environmental Design).

The 1970 results thus would seem to indicate that the vocational difficulties of the 1972 and 1973 graduates of certain curricular areas had existed at least for several years.

The Situation Five Years After Graduation

Results from the survey of 1970 degree recipients provided an indication of the curricular differences existing five years following graduation (at the time of the survey). Only the data for the two indicators of vocational success available for the first job for that graduating class have been analyzed in terms of the current job. The results for those two indicators are shown below.

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[3] The arithmetic average was used for the 1970 results instead of the median which was used for the other two surveys.

Rate of Unrelated Employment (Current Job)

Highest Rates		Lowest Rates	
Letters	56.3%	Computer Science	0.0%
Social Sciences	52.6%	Health Professions	1.9%
Foreign Languages	51.0%	Architecture & Environmental Design	6.0%
Psychology	42.4%	Education	14.7%
Physical Sciences	33.3%	Agriculture & Natural Resources	15.8%
Fine & Applied Arts	24.5%	Engineering	16.1%
Home Economics	21.9%	Biological Sciences	16.7%

Annual Salary (Current Job)

Lowest Salaries		Highest Salaries	
Public Affairs & Services	$9,530	Computer Science	$19,365
Foreign Languages	10,155	Agriculture & Natural Resources	18,464
Home Economics	10,663	Engineering	18,043
Letters	11,282	Business & Management	17,0[illegible]
Fine & Applied Arts	11,511	Health Professions	16,834
Education	11,600	Architecture & Environmental Design	14,664
Biological Sciences	13,029	Communications	14,615

These results for the 1970 bachelor's graduates five years following graduation are very similar to the first job results for the same graduating class. On rate of unrelated employment, only one of the seven highest rate curricular areas for the first job did not repeat for the five year point (Biological Sciences), and just two of seven lowest rate curricular areas no longer were at that level after five years (Home Economics and Communications). On annual salary, only at the highest salary end of the distribution was there any lack of agreement between the first job and the current job situations, and then all but one of seven curricular areas repeated (Physical Sciences was the only exception).

The five year after graduation results from the survey of 1970 graduates provide a strong suggestion that the job advantages initially encountered by graduates of particular curricular areas persist well beyond the point of the entry job.

Comparison of Most Successful and Least Successful Curricular Areas

A comparison of the two groups of curricular areas whose bachelor's graduates have been found to differ so consistently in their degree of job success provides additional insight into the dynamics of the differences.

First of all, the curricular areas reflecting the highest overall degree of vocational success, almost without exception, are considerably more directly related to the world of work than are the least successful areas. There is in each case a fairly obvious vocational goal or outlet. Engineering majors generally are preparing to become engineers, Computer Science majors to secure employment in some aspect of the computer field, those in the Health Professions to begin careers in one of the health care specialties, and so on. In striking contrast, what is the vocational goal for a student in one of the Letters majors--classics, or English, or linguistics, for example? What does a graduate in Foreign Languages or in Fine & Applied Arts do vocationally? The relationships between the college program and the job market are not nearly as direct and obvious for these curricular areas.

A second distinction between the two groups of curricular areas has to do with the level of education required for entry into career fields related to the areas. In the case of the vocationally most successful curricular groupings, the bachelor's level degree usually is sufficient to enter the fields involved. This is not at all true for several of the least successful curricular areas. It is virtually impossible to become a professional psychologist--the most logical vocational target for a Psychology major--without at least a master's degree, and the doctorate is the more desired degree level. The same situation generally prevails for the Social Sciences majors, such as anthropology, economics, history or sociology.

Lastly, the two groups of curricular areas seem to contrast with one another in terms of the breadth or scope of vocational possibilities awaiting the graduate. The most successful areas, with the possible exception of Education, offer relatively wide horizons for the person with a bachelor's degree. The graduate from one of these areas can enter industry or business, go into government work, be employed in education, or even become self-employed. On the other hand, persons with bachelor's degrees in Letters, Foreign Languages, or Social Sciences are considerably limited in their occupational options. By and large, they can teach. They generally can move into other kinds of employment only if they are willing to take work unrelated to their majors.

The above considerations clearly suggest that the differences in level of vocational success found for the various curricular areas are understandable in terms of the nature of fundamental relationships between the curricular areas and the world of work. It accordingly seems reasonable to conclude that the patterns found in the University of Illinois survey results probably are not unique to that institution, but rather reflect the national picture. It, moreover, follows that those patterns, although based on data at least two years old, are generally applicable to today's college graduates.

GRADUATES' PERCEPTIONS OF VOCATIONAL SITUATION

To what extent were the graduates who were disadvantaged vocationally aware of their situation? Did their attitudes and perceptions differ noticeably from those of graduates who were better placed occupationally? The answers to these questions bear on the significance likely to be placed on the survey findings.

The perceptions of the 1973 bachelor's graduates surveyed have been addressed in terms of several variables. Job satisfaction was the first measure of the graduates' attitude toward their vocational experience. Next, two reflections of the graduates' perceptions of the major were considered: their stated attitude toward the major and the extent to which they would again take the same major if given a second opportunity. The procedure followed for each of these analyses was to contrast the results for the most successful and least successful curricular areas (based on the results for the 1973 class).

A comparison of the rates of high job satisfaction for the two groups of curricular areas is presented below.

Rates of High Job Satisfaction

Most Successful Curricular Areas		Least Successful Curricular Areas	
Engineering	54.7%	Psychology	24.8%
Computer Science	55.0%	Social Sciences	30.6%
Health Professions	61.1%	Letters	33.0%
Business & Management	54.2%	Foreign Languages	43.0%
Agriculture & Natural Resources	59.8%	Fine & Applied Arts	39.3%
Education	59.9%		
Architecture & Environmental Design	45.7%		
Median	55.0%	Median	33.0%

The bachelor's graduates in the vocationally most successful curricular areas were markedly more satisfied with their jobs than were those who had majored in the least successful areas. The median of the rates for the most successful group was two-thirds higher than the median for the other group.

Similar comparisons for the two variables related to perception of the major are shown below.

Rate of Negative Attitude Toward Major

Most Successful Curricular Areas		Least Successful Curricular Areas	
Engineering	6.6%	Psychology	25.7%
Computer Science	4.3%	Social Sciences	21.2%
Health Professions	8.7%	Letters	17.0%
Business & Management	12.5%	Foreign Languages	16.1%
Agriculture & Natural Resources	5.1%	Fine & Applied Arts	15.9%
Education	14.5%		
Architecture & Environmental Design	18.5%		
Median	8.7%	Median	17.0%

Rate of Selection of Different Major

Most Successful Curricular Areas		Least Successful Curricular Areas	
Engineering	15.6%	Psychology	46.5%
Computer Science	9.1%	Social Sciences	41.4%
Health Professions	14.9%	Letters	36.9%
Business & Management	21.0%	Foreign Languages	46.7%
Agriculture & Natural Resources	23.4%	Fine & Applied Arts	21.1%
Education	24.7%		
Architecture & Environmental Design	12.8%		
Median	15.6%	Median	41.4%

Graduates of the least successful curricular areas as a group were more negatively disposed toward their majors than were graduates of the most successful areas. Moreover, the former group would more frequently select a different major if they had the chance to repeat their undergraduate collegiate experiences. The higher median for the first variable was almost twice as large as the median for the least successful group; the most successful group median for the second variable was more than one and a half times as great as the one for the other group of curricular areas.

The bachelor's graduates surveyed seemingly were aware of the vocational discrepancies they had encountered. Furthermore, those who were disadvantaged occupationally apparently were concerned about the situation. This concern was reflected in their attitude toward both their jobs and their college majors.

IMPLICATIONS OF SURVEY RESULTS FOR STUDENTS AND INSTITUTIONS

The rather pronounced variation in the level of vocational success experienced by recent bachelor's graduates of different curricular areas definitely has implications for students and institutions.

Implications for Today's Students

The survey results seem to substantiate what has been stated with increasing frequency in the news media and in other arenas in recent years. It no longer is true, if it ever was entirely, that a college degree guarantees the recipient a relevant and desirable job. The choice of major is a critical decision in terms of its later employment potential.

College students of today accordingly would be well advised to select a curriculum with considerable care. Furthermore, their intentions with respect to continued education beyond the undergraduate level ought to be taken into consideration in that selection, inasmuch as it appears that the vocational picture for advanced degree recipients is not necessarily identical to that for bachelor's graduates. It certainly follows from the survey findings that college students should keep aware of the vocational experiences of recent graduates in their major. In so doing, students definitely should keep alert to fluctuations in the job market that would update the most recent available hard data. The current situation concerning Education is a good example of the dangers of ignoring changing conditions.

What options are open to college students armed with the most current information concerning the relationships between collegiate curricula and the job market? What courses of action can they take as they plan their academic programs?

Students of course can totally ignore the information at hand regarding the vocational implications of their educational decisions, and make those decisions on some other basis. They can, for instance, select a major entirely from the standpoint of their interest in the major. While this practice might lead to a highly satisfying situation while students are enrolled in their program of study, it also could result in considerable dissatisfaction following graduation should the chosen major happen to be one that is less favored vocationally.

The alternative choice open to college students--taking the current vocational situation into account in their educational decisions--would appear to be the one with the greater likelihood of leading to a satisfactory post-graduation job situation. Students who happen to be interested in one or more of the curricular areas which tend to lead to a relatively high level of job success have no difficulty. What about students whose interests are somehow quite inconsistent with the job market? Several obvious possibilities appear open to them. They can choose a major of

interest, then take electives in other areas to secure marketable skills. Where the chosen major is particularly lacking in vocational promise, the possibility of a minor in another area or even a double major might be considered. A third course of action would be to seek to obtain work experience while in school in fields with favorable post-graduation job possibilities.

Implications for Institutions

At the outset of this paper, reference was made to a conflicting or competing pressure that could arise from a disparity between collegiate curricular programs and the needs of the job market. The survey results quite obviously suggest that conditions currently exist that would tend to bring that competing pressure to the surface. How do institutions respond to the pressure? Do they continue to offer programs as they are, regardless of their vocational significance? Do they eliminate programs whose graduates are less marketable?

It is highly unlikely that many institutions would decide voluntarily to cut out entire programs solely or primarily on the basis of the current job situation, even where an unfavorable picture has persisted over a period of time. Preparation of students for direct entry into the job market is not the only purpose for undergraduate educational programs. One other compelling justification for such programs is certification for higher levels of education. There no doubt are others.

On the other hand, it would be extremely difficult for institutions to totally ignore the vocational scene, particularly where the job market for graduates of certain programs becomes severely tight, as currently is true for Education. This situation would tend to lead to a reduced attraction of students to such programs, which in turn would bring about a curtailing of the programs. The laws of supply and demand, after all, do apply to non-required educational services.

The picture presented by the survey findings strongly implies that colleges and universities do have rather definite obligations to their students regarding the current job situation in relation to current collegiate offerings.

It would seem that institutions should constantly keep abreast of the marketability of their own graduates. This means that they probably, at the least, ought to periodically survey their graduates regarding their post-graduation vocational experiences. Where the results from such surveys, and possibly other sources, identify substantial and/or recurring problems associated with certain programs, institutions should explore possible ways of improving the situation. This could at times involve altering programs in terms of context or emphasis.

Institutions also should keep their students informed of the nature of the job market for their graduates. This need not necessarily cause students to shy away from programs whose graduates have limited marketability. Effective counseling could lead to adoption by students of the kinds of strategies already discussed regarding program planning.

Not all persons in higher education are personally concerned about the vocational success of their graduates. Nonetheless, in light of the evidence, it would be most foolhardy for colleges and universities to remain unaware of the complexities of the current job market for college graduates. Those institutions must face the developing competing pressure between the goals of occupational relevance and program integrity, unless they have no regard for their futures. The same could be said for today's college students.

SUMMARY

Wherein there is a considerable lack of congruence between the job market for college graduates and curricular programs offered by institutions of higher education, pressure tends to develop between the two competing institutional goals of vocational relevance and curricular integrity.

Results from recent survey studies conducted at the University of Illinois show wide disparities in the level of vocational success achieved by bachelor's graduates of various broad curricular groupings. Those studies covering the 1970, 1972 and 1973 classes, show that bachelor's graduates of certain curricular areas--Engineering, Computer Science, Health Professions, Business & Management, Agriculture & Natural Resources, Education and Architecture & Environmental Design--have fared quite well in the job market on such indicators as unemployment, underemployment, employment in jobs related to the major and salary. In contrast, recipients of bachelor's degrees in other areas--Psychology, Social Sciences, Letters, Foreign Languages and Fine & Applied Arts--have had considerably less success vocationally in terms of the same indicators.

These wide discrepancies were found generally to persist over the time period covered by the surveys. Moreover, they were reflected both at the entry job point and as long as five years after graduation. The relatively low or high positions for these different curricular areas did not, however, always apply to master's and doctor's degree graduates.

The nature of these vocationally most successful and least successful curricular areas has suggested that the differences found in the University of Illinois survey results probably are generally applicable to today's college graduates as a group. Accordingly, there is a strong suggestion that the competing pressure between the desire of institutions to offer a wide array of instructional programs and their responsibility to provide graduates with marketable skills is developing.

The rather dramatic differences in the job market for recent bachelor's graduates of different curricular areas would seem to have definite implications for today's college students and for institutions of higher education. The competing pressure must be recognized and addressed by both groups.

APPENDIX A

SPECIFIC UNDERGRADUATE AND GRADUATE MAJORS
IN EACH CURRICULAR AREA[1]

Agriculture: Agricultural Economics; Agricultural Industries[2]; Agricultural Science[2]; Agronomy; Animal Science; Dairy Science; Extension Education[3]; Food Science; Forest Science; General Agriculture[2]; Horticulture; Ornamental Horticulture[2]; Teaching of Agriculture Occupations.

Architecture: Architecture; Interior Design[2]; Landscape Architecture; Urban Planning.

Biological Sciences: Anatomy [3]; Biochemistry; Biology; Biophysics[3]; Botany; Genetics[3]; Histology-Dental[3]; Microbiology; Nutritional Sciences[3]; Pathology-Medicine[3]; Pharmacognosy[3]; Pharmacology[3]; Physiology; Plant Pathology[3]; Zoology.

Business & Management: Accountancy; Business Administration; Business Education[2]; Finance; Labor & Industrial Relations[3]; Management[2]; Marketing; Quantitative Methods[2].

Communications: Advertising; Agricultural Communications[2]; Communications[3]; Journalism; Radio & Television.

Computer Science: Computer & Information Systems[2]; Computer Science.

Education: Early Childhood Education[2]; Education of Deaf and Hard of Hearing[2]; Education of Mentally Handicapped[2]; Educational Administration & Supervision[3]; Educational Psychology[3]; Elementary Education; Health Education[3]; History & Philosophy of Education[3]; Physical Education; Secondary & Continuing Education[3]; Special Education[3]; Speech Correction[3]; Technical Education Specialties[2]; Vocational & Technical Education[3].

Engineering: Engineering (Aeronautical & Astronautical, Agricultural, Architectural, Bioengineering[2], Ceramic, Chemical, Civil, Communications[2], Computer[2], Electrical, Electromagnetic & Electronic[2], Energy[3], Environmental, General[2], Industrial, Information[3], Materials[3], Mechanical, Metallurgical, Nuclear[3], Socio-Technological Systems[2], Structural[2]); Agricultural Mechanization[2]; Engineering Mechanics[2]; Engineering Physics; Mechanical Analysis & Design[2]; Theoretical & Applied Mechanics[3].

Fine & Applied Arts: Art (Crafts, Graphic Design, History, Painting, Printmaking, Sculpture); Art Education; Dance; Design[2] (Communications,

General, Industrial, Photography); Music (Instrumental, Vocal); Music Education: Teaching of Dance[2]; Theatre (Acting, Directing & Playwriting).

Foreign Languages: French; German; Italian[3]; Slavic Languages & Literature[3]; Spanish; Teaching of Latin[3]; Teaching of Russian[3].

Health Professions: Dentistry[4]; Medical Art[2]; Medical Dietetics[2]; Medicine[4]; Medical Laboratory Sciences[2], Nursing; Occupational Therapy[2]; Pedodontics[3]; Pharmacy[2]; Physical Therapy[2]; Speech & Hearing Science; Veterinary Medicine[4].

Home Economics: Home Economics; Vocational Home Economics Education.

Law: Law[4].

Letters: Classics; Comparative Literature[3]; English; English & American Literature[2]; Linguistics[3]; Philosophy; Rhetoric[2]; Speech; Teaching of English as a 2nd Language[3].

Library Science: Library Science[3].

Mathematics: Actuarial Science[2]; Mathematics; Mathematics & Computer Science[2]; Statistics[3].

Physical Sciences: Astronomy; Chemistry; Geology; Medicinal Chemistry[3]; Physics; Teaching of Earth Sciences[3].

Psychology: Psychology; Psychology - Professional[3].

Public Affairs & Services: Recreation & Municipal Park Administration; Social Work; Public Administration[3].

Social Sciences: Anthropology; Criminal Justice[2]; Economics; Geography; History; Political Science; Social Welfare[2]; Sociology; Teaching of Social Sciences[3].

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[1] Those majors represented among the respondents to the survey of 1973 graduates. The results for graduates of secondary education majors usually have been included with the results for the appropriate subject matter field (e.g., Teaching of English with English). In order to save space, most such education majors have been omitted from the listing.

[2] Undergraduate only.

[3] Graduate only.

[4] First Professional only.

APPENDIX B

Detailed Tables

TABLE 1

UNEMPLOYMENT RATE[a] BY DEGREE LEVEL
1972 GRADUATES OF UNIVERSITY OF ILLINOIS

Curricular Area[b]	Degree Level							
	Bachelor's		Master's		Doctor's		Professional[c]	
	Rate (%)	Rank[d]	Rate (%)	Rank[d]	Rate (%)	Rank[d]	Rate (%)	Rank[d]
Physical Sciences	9.0	1	0.0	17.5	1.7	8	--	--
Mathematics	8.7	2	7.7	4	0.0	13.5	--	--
Foreign Languages	7.8	3	12.5	1	7.7	3	--	--
Social Sciences	7.3	4	1.9	12	0.0	13.5	--	--
Letters	7.3	5	4.4	7	2.5	6	--	--
Communications	6.7	6	0.0	17.5	0.0*	13.5	--	--
Psychology	6.6	7	3.0	9	0.0	13.5	--	--
Fine & Applied Arts	6.1	8	10.0	2	9.5	2	--	--
Biological Sciences	5.0	9.5	7.9	3	2.7	5	--	--
Computer Science	5.0	9.5	0.0	17.5	5.6	4	--	--
Business & Management	4.4	11	1.0	13	0.0	13.5	--	--
Agriculture & Natural Resources	3.1	12	0.0	17.5	0.0	13.5	--	--
Education	2.2	13	2.2	11	2.0	7	--	--
Engineering	2.1	14	0.5	14	0.0	13.5	--	--
Architecture & Environmental Design	2.0	15	2.9	10	--	--	--	--
Health Professions	1.1	16	0.0	17.5	0.0*	13.5	0.0	2
Home Economics	0.0	17.5	5.9	6	0.0*	13.5	--	--
Public Affairs & Services	0.0	17.5	3.1	8	25.0*	1	--	--
Law	--	--	6.9	5	0.0*	13.5	2.1	1
Library Science	--	--	0.0*	17.5	--	--	--	--
All Curricular Areas Combined	4.9		3.5		1.9		1.2	

[a] Percent of responding graduates who were not employed but were seeking employment.

[b] Based on the taxonomy of instructional programs developed by NCHEMS at WICHE. See Appendix A for listing of specific majors included in each curricular area.

[c] First professional degrees.

[d] Simple rank order of the rates for the degree level.

* Based on a sample of 10 or fewer graduates.

TABLE 2

UNEMPLOYMENT RATE[a] BY DEGREE LEVEL

1973 GRADUATES OF UNIVERSITY OF ILLINOIS

Curricular Area[b]	Degree Level							
	Bachelor's		Master's		Doctor's		Professional[c]	
	Rate (%)	Rank[d]	Rate (%)	Rank[d]	Rate (%)	Rank[d]	Rate (%)	Rank[d]
[illegible]ology	10.1	1	10.3	3	0.0	12	--	--
Social Sciences	7.7	2	6.9	7	4.0	3	--	--
Letters	6.8	3	5.7	9	8.1	1	--	--
Foreign Languages	6.5	4	19.8	1	0.0	12.5	--	--
Communications	5.6	5	5.7	9	0.0*	12.5	--	--
Fine & Applied Arts	5.4	6.5	7.6	6	0.0	12.5	--	--
Public Affairs & Services	5.4	6.5	3.0	13	0.0*	12.5	--	--
Mathematics	4.5	8	12.0	2	0.0	12.5	--	--
Agriculture & Natural Resources	4.4	9.5	4.8	12	0.0	12.5	--	--
Architecture & Environmental Design	4.4	9.5	9.5	4	--	--	--	--
Biological Sciences	4.2	11	1.6	15	2.1	6	--	--
Health Professions	3.8	12	0.0	18.5	0.0*	12.5	0.0	2
Education	3.6	13	1.8	14	2.7	4	--	--
Business & Management	3.1	14	0.0	18.5	4.8	2	--	--
Engineering	2.9	15	0.6	16	2.2	5	--	--
Physical Sciences	1.9	16	5.7	9	0.0	12.5	--	--
Home Economics	1.1	17	5.0	11	0.0*	12.5	--	--
Computer Science	0.0	18	0.0	18.5	0.0*	12.5	--	--
Law	--	--	0.0*	18.5	--	--	5.5	1
Library Science	--	--	7.7	5	0.0*	12.5	--	--
All Curricular Areas Combined	4.9		4.3		2.3		2.3	

[a] Percent of responding graduates who were not employed but were seeking employment.

[b] Based on the taxonomy of instructional programs developed by NCHEMS at WICHE. See Appendix A for listing of specific majors included in each curricular area.

[c] First professional degrees.

[d] Simple rank order of the rates for the degree level.

* Based on a sample of 10 or fewer graduates.

TABLE 3

UNDEREMPLOYMENT RATE[a] BY DEGREE LEVEL

1972 GRADUATES OF UNIVERSITY OF ILLINOIS

Curricular Area[b]	Degree Level							
	Bachelor's		Master's		Doctor's		Professional[c]	
	Rate (%)	Rank[d]	Rate (%)	Rank[d]	Rate (%)	Rank[d]	Rate (%)	Rank[d]
Social Sciences	49.8	1	9.3	5	0.0	10	--	--
Psychology	47.7	2	16.7	2	0.0	10	--	--
Foreign Languages	38.8	3	25.0	1	0.0	10	--	--
Public Affairs & Services	37.5	4	0.0	16.5	0.0*	10	--	--
Letters	34.6	5	11.1	4	0.0	10	--	--
Home Economics	26.1	6	15.4	3	0.0*	10	--	--
Agriculture & Natural Resources	25.5	7	0.0	16.5	0.0	10	--	--
Fine & Applied Arts	21.7	8	4.2	8	0.0	10	--	--
Biological Sciences	20.5	9	1.3	12	1.4	1.5	--	--
Business & Management	18.1	10	0.0	16.5	0.0	10	--	--
Mathematics	16.2	11	2.2	10	0.0	10	--	--
Education	13.9	12	1.7	11	0.0	10	--	--
Engineering	7.5	13	0.0	16.5	1.4	1.5	--	--
Physical Sciences	7.1	14	6.7	6	0.0	10	--	--
Communications	6.4	15	6.2	7	0.0*	10	--	--
Computer Science	5.9	16	0.0	16.5	0.0	10	--	--
Architecture & Environmental Design	4.3	17	0.0	16.5	--	--	--	--
Health Professions	0.0	18	0.0	16.5	0.0*	10	0.0	2
Law	--	--	0.0*	16.5	--	--	1.4	1
Library Science	--	--	2.6	9	0.0*	10	--	--
All Curricular Areas Combined	22.0		3.2		0.3		0.9	

[a] Percent of graduates whose principal activity was employment who were employed in clerical, skilled, semi-skilled, laboring, service or routine sales jobs. This determination quite possibly resulted in underestimates of the amount of underemployment among master's and doctor's degree graduates.

[b] Based on a taxonomy of instructional programs developed by NCHEMS at WICHE. See Appendix A for listing of specific majors included in each curricular area.

[c] First professional degrees.

[d] Simple rank order of rates for the degree level.

* Based on a sample of 10 or fewer graduates.

TABLE 4

UNDEREMPLOYMENT RATE[a] BY DEGREE LEVEL

1973 GRADUATES OF UNIVERSITY OF ILLINOIS

Curricular Areas[b]	Degree Level							
	Bachelor's		Master's		Doctor's		Professional[c]	
	Rate (%)	Rank[d]	Rate (%)	Rank[d]	Rate (%)	Rank[d]	Rate (%)	Rank[d]
Psychology	47.2	1	9.1	5	0.0	10	--	--
Social Sciences	43.8	2	14.8	2	0.0	10	--	--
Letters	34.7	3	14.0	3	0.0	10	--	--
Foreign Languages	34.5	4	25.0	1	6.3	1	--	--
Home Economics	29.3	5	0.0	16.5	0.0*	10	--	--
Fine & Applied Arts	26.1	6	8.2	6	0.0	10	--	--
Public Affairs & Services	24.1	7	2.5	10	0.0*	10	--	--
Biological Sciences	19.3	8	0.0	16.5	0.0	10	[illegible]	--
Physical Sciences	19.2	9	0.0	16.5	0.0	10	--	--
Communications	18.4	10	10.7	4	0.0*	10	--	--
Mathematics	15.8	11	4.1	9	0.0	10	--	--
Education	14.2	12	0.8	11	0.0	10	--	--
Business & Management	11.5	13	4.7	7	0.0	10	--	--
Agriculture & Natural Resources	10.5	14	0.0	16.5	0.0	10	--	--
Architecture & Environmental Design	7.1	15	0.0	16.5	--	--	--	--
Computer Science	5.0	16	0.0*	16.5	0.0*	10	--	--
Engineering	3.0	17	0.7	12	0.0	10	--	--
Health Professions	1.6	18	0.0	16.5	0.0*	10	0.7	1
Law	--	--	0.0*	16.5	--	--	0.0	2
Library Science	--	--	4.4	8	0.0*	10	--	--
All Curricular Areas Combined	19.4		4.0		0.2		0.4	

[a] Percent of graduates whose principal activity was employment who were employed in clerical, skilled, semi-skilled, laboring, service, or routine sales jobs. This determination quite possibly resulted in underestimates of the amount of underemployment among master's and doctor's graduates.

[b] Based on taxonomy of instructional programs developed by NCHEMS at WICHE. See Appendix A for listing of specific majors included in each curricular area.

[c] First professional degrees.

[d] Simple rank order of the rates for the degree level.

TABLE 5

EMPLOYMENT IN JOBS UNRELATED TO COLLEGE MAJOR[a] BY DEGREE LEVEL
1973 GRADUATES OF UNIVERSITY OF ILLINOIS

Curricular Area[b]	Degree Level							
	Bachelor's		Master's		Doctor's		Professional[c]	
	Rate (%)	Rank[d]	Rate (%)	Rank[d]	Rate (%)	Rank[d]	Rate (%)	Rank[d]
Social Sciences	63.3	1	35.2	1	6.2	5.5	--	--
Psychology	62.9	2	9.1	7	7.1	4	--	--
Foreign Languages	50.6	3	25.0	3	12.5	2	--	--
Letters	46.7	4	16.7	4	3.3	9.5	--	--
Physical Sciences	32.7	5	0.0	18	3.3	9.5	--	--
Biological Sciences	31.2	6	0.0	18	4.8	8	--	--
Fine & Applied Arts	28.4	7	13.9	5	0.0	14.5	--	--
Home Economics	26.7	8	0.0	18	0.0*	14.5	--	--
Public Affairs & Services	24.1	9	5.8	10	0.0*	14.5	--	--
Mathematics	22.5	10	10.2	6	0.0	14.5	--	--
Communications	18.4	11	28.6	2	33.3*	1	--	--
Agriculture & Natural Resources	15.3	12	8.0	8	6.2	5.5	--	--
Education	14.2	13	4.7	12.5	0.0	14.5	--	--
Business & Management	11.1	14	4.7	12.5	5.0	7	--	--
Architecture & Environmental Design	7.9	15	5.3	11	--	--	--	--
Engineering	5.8	16	3.6	14	9.1	3	--	--
Computer Science	5.0	17	0.0*	18	0.0*	14.5	--	--
Health Professions	2.1	18	2.0	15	0.0*	14.5	2.2	1
Law	--	--	0.0*	18	--	--	1.0	2
Library Science	--	--	6.7	9	0.0*	14.5	--	--
All Curricular Areas Combined	25.0		8.3		4.4		1.6	

[a] Percent of graduates whose principal activity was employment who were employed in jobs judged by them to be unrelated to the major of their 1973 degree. These data are not available for 1972 graduates.

[b] Based on taxonomy of instructional programs developed by NCHEMS at WICHE. See Appendix A for listing of specific majors included in each curricular area.

[c] First professional degrees.

[d] Simple rank order of the rates for the degree level.

* Based on a sample of 10 or fewer graduates.

TABLE G

MEDIAN GROSS ANNUAL SALARY[a] BY DEGREE LEVEL

1973 GRADUATES OF UNIVERSITY OF ILLINOIS

Curricular Areas[b]	Bachelor's		Master's		Doctor's		Professional[c]	
	Salary ($)	Rank[d]	Salary ($)	Rank[d]	Salary ($)	Rank[d]	Salary ($)	Rank[d]
Engineering	$12,100	1	$14,000	3	$17,700	3	--	--
Computer Science	11,500	2	15,400*	2	19,000*	1	--	--
Health Professions	11,000	3	11,400	9	17,000*	5	$11,700	2
Business & Management	10,900	4	13,600	4	18,000	2	--	--
Physical Sciences	10,000	5	11,800	6	13,300	12	--	--
Agriculture & Natural Resources	9,700	6	12,300	5	15,600	8	--	--
Architecture & Environmental Design	9,500	7	11,200	10.5	--	--	--	--
Mathematics	9,300	8	10,600	13	12,500	15	--	--
Biological Sciences	8,600	9	10,000	15.5	10,300	18	--	--
Education	8,500	10	11,700	7	17,100	4	--	--
Public Affairs & Services	8,400	11.5	11,100	12	14,000*	10.5	--	--
Social Sciences	8,400	11.5	10,400	14	13,000	13.5	--	--
Communications	8,200	13.5	11,200	10.5	16,000*	6.5	--	--
Psychology	8,200	13.5	11,500*	8	13,000	13.5	--	--
Fine & Applied Arts	8,100	15	10,000	15.5	14,100	9	--	--
Foreign Languages	8,000	16.5	9,300	19	11,500	17	--	--
Letters	8,000	16.5	9,500	18	12,300	16	--	--
Home Economics	7,100	18	9,200	20	14,000*	10.5	--	--
Law	--	--	16,000*	1	--	--	13,000	1
Library Science	--	--	9,700	17	16,000*	6.5	--	--
All Curricular Areas Combined	9,600		11,300		14,700		12,500	

[a] Restricted to responding graduates whose principal activity was employment.

[b] Based on the taxonomy of instructional programs developed by NCHEMS at WICHE. See Appendix A for listing of specific majors included in each curricular area.

[c] First professional degrees.

[d] Simple rank order of the median salaries for the degree level.

* Based on a sample of 10 or fewer graduates.